

# NON-PLASMA REACTION APPARATUS AND METHOD

## Abstract of the Disclosure

An apparatus and method for forming a self-limiting etchable layer on a workpiece. The apparatus comprises: a chamber adapted for holding a workpiece; a distribution plate within the chamber, wherein the distribution plate includes channels for introducing a first fluid (e.g., ammonia) and a second fluid (e.g., hydrogen fluoride) into the apparatus, such that the first and second fluids may be directed into the apparatus at the angles  $\theta_1$  and  $\theta_2$  with respect to an exposed surface of the distribution plate, wherein the channels for each type of fluid may be arranged respectively in alternating rings; and wherein each angle  $\theta_1$  and  $\theta_2$  are at least 45 degrees and less than 90 degrees, offset by  $\alpha_2$  and  $\beta_2$  and  $\alpha_1$  and  $\beta_1$  by analogy. The method for forming the etchable layer on the workpiece comprises introducing a first fluid and a second fluid into the chamber through the channels.